

Amendments to the Drawings:

The attached sheet of drawings includes changes to FIG. 2. This sheet, which includes FIGS. 1 and 2, replaces the original sheet including FIGS. 1 and 2 and is identified with the words "Replacement Sheet" in the top margin. A separate annotated sheet showing the changes is also attached. In FIG. 2, reference character "78" has been changed to --87-- and reference character "80" has been changed to --90-- to correct an inadvertent clerical error.

Attachments: Replacement sheet

Annotated sheet showing changes

REMARKS

Applicants respectfully request that the Office change the Attorney Docket Number associated with this case from “00/21107” to --12298/48501--.

Claims 1 - 93 are pending in this application. Independent claims 1 and 40 have been amended to more clearly define the invention. Support for the amendments may be found, for example, at pages 17, 19-20, and 39-40. Dependent claims 2, 16 and 41, 55, have been amended in accordance with the amendments of claims 1 and 40, respectively. Claim 38 has been amended to more clearly define the scope of the invention. Support for the amendment may be found, for example, at pages 38-39. Claims 74 and 75 are amended to correct inadvertent clerical errors. Claims 77-93 are new. Support for these claims may be found, for example, at pages 17-19 and 22-24.

Applicants note that no art based rejections and no statutory rejections or objections have been asserted against claims 67, 68, and 69.

Objections to the Disclosure

The Office Action objects to the disclosure because reference characters 78 and 80 are each used to indicate different things in FIGS. 2 and 3. Applicants have amended FIG. 2 by changing reference character “78” to --87-- and reference character “80” to --90--. These changes correct an inadvertent clerical error. These changes also necessitate correction of a corresponding clerical error in the specification at pages 38 and 39, as shown in the amendments above. As the informalities have been corrected, Applicants respectfully request withdrawal of the objection to the disclosure.

35 U.S.C. § 102(b) Rejections to *Nitzan*

The Office Action rejects claims 39-57, 59-64, 66, and 70-76 under 35 U.S.C. § 102(b) as being unpatentable over US Patent No. 5,652,043 to Nitzan (hereinafter “*Nitzan*”). The Office Action asserts that these claims are “either in a product-by-process format, or contain recitation of how the present separator was made (‘self-form’), which are treated under product-by-process practice.” Office Action at p.2. While not necessarily agreeing with the Office Action,

Applicants assert that the structure implied by process steps should be considered when assessing the patentability of product-by-process claims over the prior art. MPEP 2113.

Concerning dependent claim 39 and independent claim 40, a correct inquiry focuses on whether the product defined by the claim is patentably distinguishable over the disclosure of *Nitzan* in view of at least, the structural claim limitations defining a cell as having:

- 1) “self-form[ed] an interfacial separator layer within an electrolyte layer between said negative and positive poles,” as recited in dependant claim 39 *vis a vis* its base claim, independent claim 1; and
- 2) “an integral and in-situ formed interfacial separator layer interposed [between said negative and positive poles] within an electrolyte layer, wherein said integral and in-situ formed interfacial separator layer is comprised of interaction and/or reaction products of components in electrolyte solution in negative pole layer and electrolyte solution in positive pole layer,” as recited in independent claim 40.

See MPEP 2113 (citing *In re Garner*, 412 F.2d 276, 279 (CCPA 1979)).

Nitzan relates to an electrolyte layer adhered to a negative and a positive pole layer. *Nitzan* at col. 5:10-25. *Nitzan*’s electrolyte layer “includes a porous insoluble substance, such as but not limited to, filter paper, plastic membrane, cellulose membrane, cloth, etc.” *Id.* at col. 5:26-32. *Nitzan* fails to disclose a structure having, at least, a “self-form[ed] interfacial separator layer within an electrolyte layer between said negative and positive poles,” as recited in dependant claim 39, or “an integral and in-situ formed interfacial separator layer interposed [between said negative and positive poles] within an electrolyte layer, wherein said integral and in-situ formed interfacial separator layer is comprised of interaction and/or reaction products of components in electrolyte solution in negative pole layer and electrolyte solution in positive pole layer,” as recited in independent claim 40.

Moreover, as stated in the pending specification, “The present invention successfully addresses the shortcomings of [*Nitzan*] by providing a cell in which a separator layer self-forms, thereby ... ensuring optimal contact between the separator layer and the pole layers.” Application at p. 14:4-8. Thus, the structure of *Nitzan* lacks the distinctive structural characteristics implied by the pending claims.

Accordingly, dependent claim 39 and independent claim 40 are not anticipated by *Nitzan*. As independent claim 40 is not anticipated by *Nitzan*, it stands to reason that dependent claims 41-57, 59-64, 66, and 70-66, which depend from independent claim 40, are likewise not anticipated by *Nitzan*. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejections of claims 39-57, 59-64, 66, and 70-76 as being unpatentable over *Nitzan*.

35 U.S.C. § 102(b) Rejections to Moser

The Office Action rejects claims 1, 6, 37, 39, 40, 45, and 76 under 35 U.S.C. § 102(b) as being unpatentable over US Patent No. 3,660,163 to Moser (hereinafter “*Moser*”). Concerning independent claims 1 and 40, *Moser* fails to teach at least that “contacting a negative pole layer and a positive pole layer ... causes components in electrolyte solution in negative pole layer and components in electrolyte solution in positive pole layer to interact and/or react with each other and self-form an interfacial separator layer within an electrolyte layer between said negative and positive poles,” as recited in independent claim 1 or “an integral and in-situ formed interfacial separator layer interposed [between negative and positive poles], wherein said integral and in-situ formed interfacial separator layer is comprised of interaction and/or reaction products of components in electrolyte solution in negative pole layer and electrolyte solution in positive pole layer,” as recited in independent claim 40.

Moser relates to a solid state primary cell having a lithium anode, a solid state cathode that contains iodine, and a solid state lithium halide electrolyte. *Moser* at col. 1:2-4; 1:24-26; 1:43-47; and 2:8-17. In *Moser* the reaction is in the solid state, a fact that is underscored by the statement: “The cells of this invention are adversely affected by atmospheric moisture, so the cells are assembled ... using substantially anhydrous and/or dried components.” Col. 2:43-47. Further, *Moser* is directed to reaction between anode and cathode pole elements to form a separator. As *Moser* fails to disclose, at least, “contacting a negative pole layer and a positive pole layer one with the other, wherein contacting causes components in electrolyte solution in negative pole layer and components in electrolyte solution in positive pole layer to interact and/or react with each other and self-form an interfacial separator layer within an electrolyte layer between said negative and positive poles” as recited in independent claim 1, or an “integral and in-situ formed interfacial separator layer is comprised of interaction and/or reaction products

of components in electrolyte solution in negative pole layer and components in electrolyte solution in positive pole layer” as recited in independent claim 40, *Moser* cannot anticipate independent claims 1 or 40. As independent claims 1 and 40 are not anticipated by *Moser*, it stands to reason that *Moser* cannot anticipate dependent claims 6, 37, and 39, which depend from independent claim 1 or dependent claims 45 and 76, which depend from independent claim 40. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejections of claims 1, 6, 37, 39, 40, 45, and 76 as being unpatentable over *Moser*.

35 U.S.C. § 102(b) Rejections to *Dixon*

The Office Action rejects claims 39-48, 63, 65, and 66 under 35 U.S.C. § 102(b) as being unpatentable over US Patent No. 4,834,772 to Dixon *et al.* (hereinafter “*Dixon*”). The Office Action asserts that the cells of *Dixon* would have the structure implied by the claims at issue. See Office Action at p. 3.

Dixon relates to a polymeric gelled electrolyte and a method for preparing the same. The polymeric coating of *Dixon* is coated in thin layers onto anode and cathode structures. *Dixon* at col. 2:54-61. The coatings are formed by dissolving chitosan in a dilute aqueous solution of organic or inorganic acids. *Id.* at 2:16-19. A thin layer of this coating may be formed into a gel by contacting it with an alkaline solution. *Id.* at 2:23-26. Gelled chitosan has properties of a separator according to *Dixon*. *Id.* at 2:54-58. *Dixon* forms the gelled separator on the cathode and separately forms the gelled separator on the anode. The separator clad anode and separator clad cathode are then contacted. In contrast, in the present invention the anode and anode electrolyte are contacted with the cathode and cathode electrolyte and on contact between the two electrolytes an integral and in-situ separator is formed. Thus, *Dixon* fails to disclose a structure having, at least, a “self-form[ed] interfacial separator layer within an electrolyte layer between said negative and positive poles,” as recited in dependant claim 39, or “an integral and in-situ formed interfacial separator layer interposed [between said negative and positive poles] within an electrolyte layer, wherein said integral and in-situ formed interfacial separator layer is comprised of interaction and/or reaction products of components in electrolyte solution in negative pole layer and electrolyte solution in positive pole layer,” as recited in independent claim 40. Thus, dependent claim 39 and independent claim 40 are not anticipated by *Dixon*. As

independent claim 40 is not anticipated by *Dixon*, it stands to reason that dependent claims 41-48, 63, 65, and 66 which depend on independent claim 40, are likewise not anticipated by *Dixon*. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejections of claims 39-48, 63, 65, and 66 as being unpatentable over *Dixon*.

35 U.S.C. § 102(b) Rejections to *Manganaro*

The Office Action rejects claims 39, 40, 45-47, 63, and 65 under 35 U.S.C. § 102(b) as being unpatentable over US Patent No. 5,155,144 to Manganaro *et al.* (hereinafter “*Manganaro*”). The Office Action asserts that *Manganaro*’s separator sheet, when used with anodes and cathodes, would have the structure implied by the claims at issue. *See* Office Action at pp. 3-4.

Manganaro relates to a porous sheet comprising a polymeric matrix having liquid insoluble, particulate, activated polysaccharide media dispersed therein and a method of manufacturing the sheet. *Manganaro* at col. 4:51-5:10. *Manganaro* utilizes a conventional manner of introducing a physical barrier between two half cells. *Id.* at col. 18:18-57. The structure of a product formed using a *Manganaro* sheet could include an anode, a cathode, and a *Manganaro* polysaccharide-based porous sheet placed therebetween. *See Id.* at col.18:50-56. *Manganaro* fails to disclose a structure having, at least, a “self-form[ed] interfacial separator layer within an electrolyte layer between said negative and positive poles,” as recited in dependant claim 39, or “an integral and in-situ formed interfacial separator layer interposed [between said negative and positive poles] within an electrolyte layer, wherein said integral and in-situ formed interfacial separator layer is comprised of interaction and/or reaction products of components in electrolyte solution in negative pole layer and electrolyte solution in positive pole layer,” as recited in independent claim 40. Thus, dependent claim 39 and independent claim 40 are not anticipated by *Manganaro*. As independent claim 40 is not anticipated by *Manganaro*, it stands to reason that dependent claims 45-47, 63, and 65, which depend on independent claim 40, are likewise not anticipated by *Manganaro*. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejections of claims 39, 40, 45-47, 63, and 65 as being unpatentable over *Manganaro*.

35 U.S.C. § 102 Rejections to *Denton* and *Kolb*

The Office Action rejects claims 39, 40, 47, 49, and 60 under 35 U.S.C. § 102(b) as being unpatentable over US Patent No. 5,962,168 to Denton (hereinafter “*Denton*”). The Office Action rejects claims 39, 40, 49-51, and 54 under 35 U.S.C. §§ 102(a) and (e) as being unpatentable over US Patent No. 6,080,282 to Kolb *et al.* (hereinafter “*Kolb*”). The Office Action asserts that the cells of *Denton* or *Kolb* would have the structure implied by the claims at issue. See Office Action at p. 4-5.

Denton relates to a gel electrolyte bonded electrochemical cell including first and second electrodes and a layer of an electrolyte system disposed therebetween. *Denton* at col. 2:29-3:10. *Denton*’s electrolyte is liquid or solid. *Id.* at col. 3:26-28.

Kolb relates to an electrolytic solution comprising a polymerizable electrolyte material and a reinforcement polymer. *Kolb* at col. 3:29-31. The process of *Kolb* first requires the fabrication of the electrolytic solution. *Id.* at 4:48-54. The electrolytic solution is applied to a first electrode material and then cured. The polymerizable portion of the electrolytic solution becomes polymerized, thus forming a thermoset electrolyte gel. *Id.* col. 4:55-67. A second electrode material is applied to the electrolyte gel. *Id.* at col. 5:6-14. *Kolb* praises the mechanical properties of the electrolyte gel and indicates that “the electrolyte becomes stronger and obviates the need for mechanical separators...which are often placed between electrodes of an electrolytic cell to maintain separation of the electrodes.” *Id.* at col. 5:37-43.

Denton and *Kolb* each fail to disclose a structure having, at least, a “self-form[ed] interfacial separator layer within an electrolyte layer between said negative and positive poles,” as recited in dependant claim 39, or “an integral and in-situ formed interfacial separator layer interposed [between said negative and positive poles] within an electrolyte layer, wherein said integral and in-situ formed interfacial separator layer is comprised of interaction and/or reaction products of components in electrolyte solution in negative pole layer and electrolyte solution in positive pole layer,” as recited in independent claim 40.

Thus, dependent claim 39 and independent claim 40 are not anticipated by *Denton* or *Kolb*. Furthermore, as independent claim 40 is not anticipated by *Denton* or *Kolb*, it stands to

reason that dependent claims 47, 49, and 60, and dependent claims 49-51 and 54, each of which depend from independent claim 40, are likewise not anticipated by *Denton* or *Kolb*, respectively. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejections of claims 39, 40, 47, 49, and 60 as being unpatentable over *Denton* and of the 35 U.S.C. § 102(b) and (e) rejections of claims 39, 40, 49-51, and 54 as being unpatentable over *Kolb*.

35 U.S.C. § 103(a) Rejections

The Office Action rejects claim 58 under 35 U.S.C. § 103(a) as being unpatentable over *Nitzan*. The Office Action rejects claim 38 under 35 U.S.C. § 103(a) as being unpatentable over *Moser* in view of *Nitzan*. These rejections are respectfully traversed.

To render a claim obvious, all limitations of the claim must be present in the reference or references when combined. For the reasons set forth above, neither *Nitzan* nor *Moser* anticipate independent claims 1 and 40. Moreover, for the reasons stated above, neither *Nitzan* nor *Moser*, either alone or in combination, teach each and every limitation of independent claim 1 or 40. It follows that neither *Moser* nor *Nitzan*, either alone or in combination, could render dependent claims 38 and 58 obvious.

For at least the reasons set forth above, Applicants submit that the informalities noted in the disclosure have been corrected and respectfully request withdrawal of the objection to the disclosure. Applicants also submit that independent claims 1 and 40 define patentable subject matter. Claims 2-39 and 41-76 each depend, directly or indirectly, from independent claims 1 and 40, respectively. These claims, also define patentable subject matter. Accordingly, Applicants respectfully request that the various §§ 102(a), (b), (e), and § 103(a) rejections to claims 1-76 be withdrawn.

Conclusion:

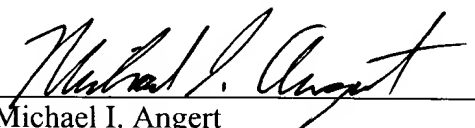
The claims are allowable over the prior art for the reasons set forth above. A Notice to that effect is respectfully requested.

The Office is hereby authorized to charge all required fees, including all required claim fees under 37 C.F.R. §1.16 and/or all required extension of time fees under 37 C.F.R. §1.17, or credit any overpayments to Deposit Account 11-0600.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Respectfully submitted,

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Michael I. Angert
Reg. No. 46,522

Kenyon & Kenyon
1500 K Street, NW, Suite 700
Washington, D.C. 20005-1257
Tel: (202) 220-4393
Fax: (202) 220-4201

Attachments

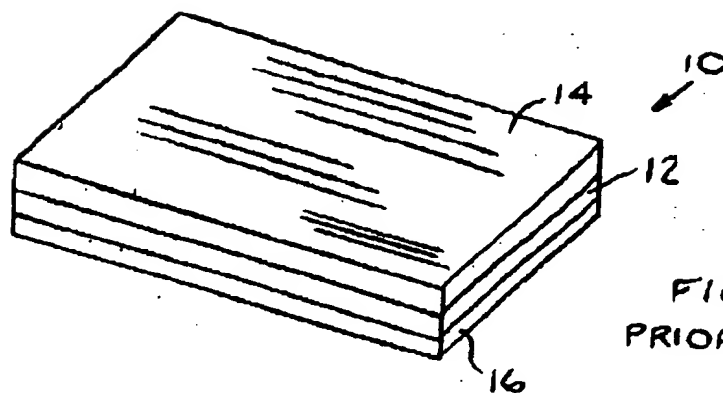


FIG. 1
 PRIOR ART

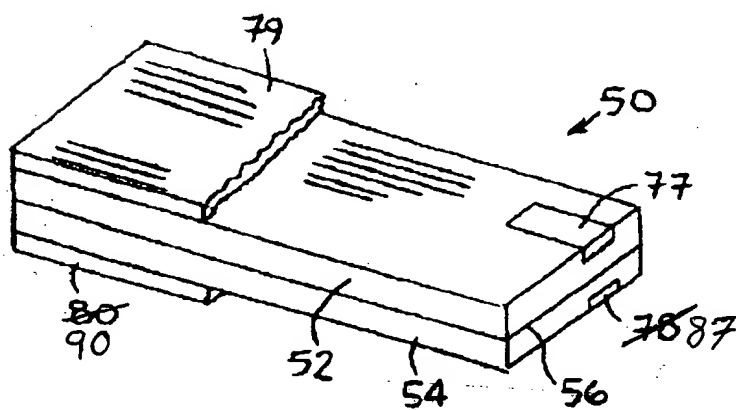


FIG. 2